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IS 13596 (1993): Dimensional tolerances on grinding wheels
[PGD 9: Abrasives]

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शाण पहियों की आयाम छूट

Indian Standard

DIMENSIONAL TOLERANCES ON GRINDING WHEELS

UDC 621·922·025 : 621·753·1

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

January 1993

Price Group 3

Abrasives Sectional Committee, PE 09

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Abrasives Sectional Committee had been approved by the Production Engineering Division Council.

This standard covers the dimensional tolerances of grinding wheels such as tolerances for bore diameter, wheel thickness, recess diameter, recess depths, axial and radial runout for various types of wheels.

However, for special requirements the tolerances to be followed shall be as agreed to between the purchaser and the manufacturer.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DIMENSIONAL TOLERANCES ON GRINDING WHEELS

1 SCOPE

1.1 This standard specifies the dimensional tolerances of grinding wheels used in the following applications:

a) Centreless grinding
b) Thread grinding
c) Roll grinding
d) Profile grinding
e) Slot grinding
f) Crankshaft grinding
g) Form grinding
h) Saw sharpening
j) Tool grinding
k) Cutting off
m) Weld preparation
n) Portable snagging

1.2 This standard is applicable only to vitrified, resinoid and rubber bonded wheels. This does not apply to magnesite bonded wheels.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
2324 (Part 1) : 1985	Bonded abrasive grinding wheels: Part 1 Profiles and types
2324 (Part 2) : 1985	Bonded abrasive grinding wheels: Part 2 Dimensions
8915 : 1978	Dimensions for depressed centre wheels, Type 27

3 DIMENSIONS

Dimensions of grinding wheels shall be in accordance with IS 2324 (Part 2) : 1985 and IS 8915 : 1978.

4 TOLERANCE ON DIAMETER, AXIAL AND RADIAL RUNOUTS

Tolerances on outside diameter (OD), axial and radial runouts for diameter, axial and radial runouts for peripheral grinding wheels shall be as given in Table 1 read with Fig. 1.

5 TOLERANCES ON HOLE DIAMETER

Tolerances on hole diameter for wall grinding wheels shall be as given in Table 2.

6 TOLERANCES ON RECESS DIAMETERS AND MAXIMUM FILLET RADIUS

Tolerances for recess diameters and maximum fillet radius (radius in the recess) shall be as given in Table 3.

7 TOLERANCES ON WHEEL THICKNESSES

Tolerances on wheel thicknesses for both peripheral and wall grinding wheels shall be as given in Table 4.

8 TOLERANCES ON RECESS DEPTHS

8.1 Tolerances on recess depths for both pheripheral and wall grinding wheels shall be as given in Table 5.

8.2 Tolerances given in Table 5 are applicable to recess depths for both one sided recess and two sided recess grinding wheels. However, to prevent excessive weakening of the residual web, in the wheel, the sum of plus deviations in both the recesses to be in such a way that the total deviation does not exceed 1·5 times the tolerance. For axample:

If

Tolerance on one side of recess, (Say a) = 0·4 mm

Tolerance of another side of recess, (Say b) = 0·4 mm

then, Total Tolerance $(a + b) < 0.6$ mm

9 TOLERANCES ON STRAIGHT CUP WHEELS, TAPER CUP WHEELS AND DISH WHEELS

9.1 For straight cup wheels, Taper cup and dish wheels, the tolerances for outside diameter, Axial runout, Radial runout, hole diameter and Thickness are similar to that of as specified in Tables 1 to 4 for general purpose applications. For specific customer requirements, the same are to be asked for from the manufacturer.

9.2 Tolerances on Wall (Rim) Thickness and Thickness at Hole

Tolerances for wall thickness and Thickness at hole shall be as given in Table 6 read with Fig. 2.

10 TOLERANCES ON DEPRESSED CENTRE WHEELS

10.1 For depressed centre wheels tolerances for outside diameter. Axial runout and radial runout shall be as given in Table 7, read with Fig. 2.

10.2 Tolerances on hole diameter shall be as given in Table 8.

10.3 Tolerances on wheels thickness shall be as given in Table 9.

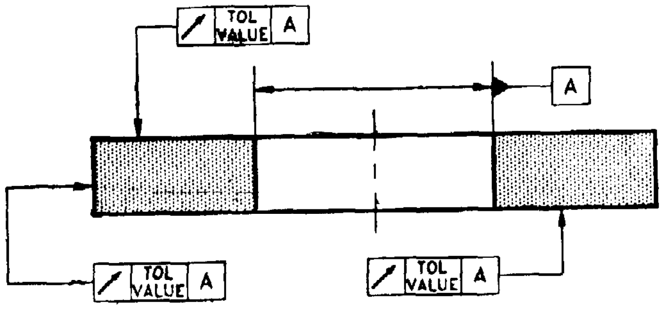
Table 1 Tolerances on OD, Axial and Radial Runouts

(*Clause* 4)

All dimensions in millimetres.

Grinding Wheel Diameter Range		Tolerance on OD	Axial Runout	Radial Runout
Over	Up to and Including			
(1)	(2)	(3)	(4)	(5)
—	8	± 0·8	—	—
8	25	± 0·8	0·4	0·4
25	50	± 0·8	0·4	0·4
50	100	± 1·5	0·4	0·4
100	200	± 3·0	0·4	0·5
200	450	± 3·0	0·4	0·8
450	750	± 3·2	0·5	1·0
750	1 200	± 3·2	0·5	1·0

NOTE — For details of types of wheels, refer IS 2324 (Part 1) : 1985.



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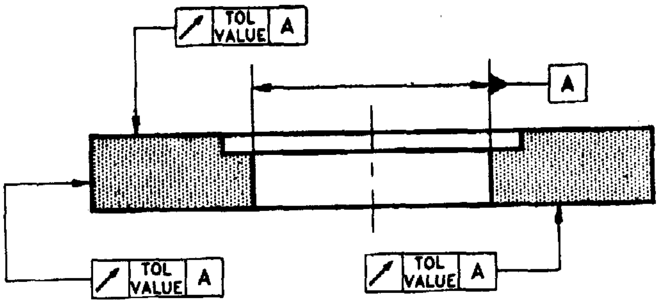

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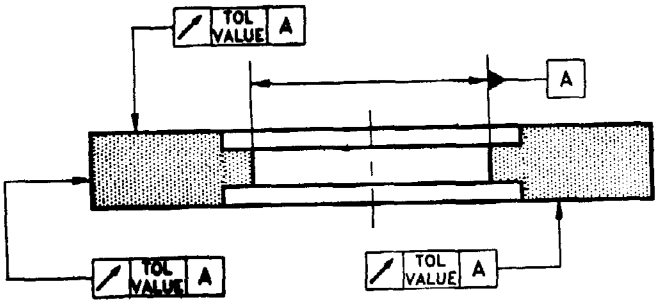


TYPE 7

FIG. 1 AXIAL AND RADIAL RUNOUTS FOR PERIPHERAL GRINDING WHEELS

Table 2 Tolerances on Hole Diameters

(*Clause* 5)

All dimensions in millimetres.

Grinding Wheel Hole Diameter Range		Tolerances on Bore Diameter
Over	Up to and Including	
—	25·0	+ 0·16 0
25·0	100	+ 0·20 0
100	150	+ 0·25 0
150	200	+ 0·30 0
200	—	+ 0·35 0

Table 3 Tolerances on Recess Diameters and Maximum Fillet Radius (Radius in the Recess)

(*Clause* 6)

All dimensions in millimetres.

Recess Diameter Range		Tolerance on Recess Diameter	Maximum Fillet Radius
Over	Up to and Including		
3·2	8	+ 0·1 + 0·8	0·8
8	20	+ 0·1 + 1·2	1·2
20	50	+ 0·1 + 2·0	2·0
50	125	+ 0·1 + 5·0	3·2
125	315	+ 0·1 + 5·0	5·0
315	—	+ 0·1 + 6·0	6·0

Table 4 Tolerances on Wheel Thickness

(*Clause* 7)

All dimensions in millimetres.

Grinding Wheel Thickness Range		Tolerance on Thickness
Over	Up to and Including	
0·4	1·6	± 0·150
1·6	5·0	± 0·400
5·0	16·0	± 0·500
16·0	30·0	± 0·600
30·0	50·0	± 0·800
50·0	150·0	± 1·600
150·0	300·0	± 2·000
300·0	500·0	± 4·000

NOTES

a) These tolerances are applicable for both peripheral and wall grinding wheels.

b) Specific closer tolerance requirement for any customer to be independently asked for.

Table 5 Tolerances on Recess Depths

(*Clause* 8.1)

All dimensions in millimetres.

Grinding Wheel Recess Depth Range		Tolerance on Recess Depths
Over	Up to and Including	
1·6	5	+ 0·4 0
5	16	+ 0·8 0
16	50	+ 1·2 0
50	—	+ 1·6 0

Table 6 Tolerances on Wall (Rim) Thickness and Thickness at Hole

(*Clause* 9.2)

All dimensions in millimetres.

Wall Thickness and Thickness at Hole		Tolerance on Wall Thickness	Tolerance on Thickness at Hole
Over	Up to and Including		
—	10	± 0·8	± 0·8
10	15	± 1·0	± 1·0
15	20	± 1·0	± 1·0
20	50	± 1·2	± 1·2
50	—	± 1·6	± 1·6

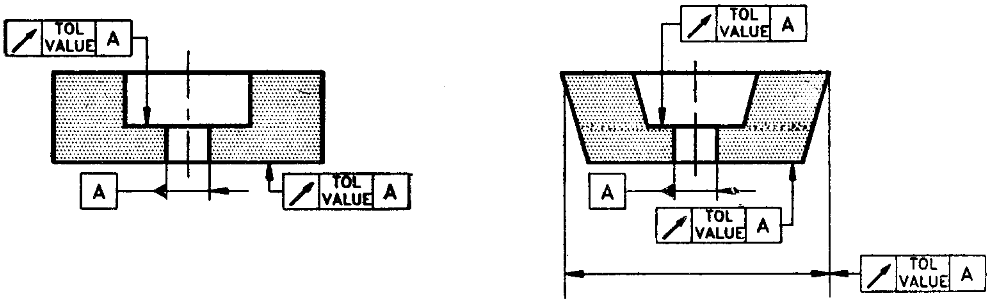
NOTE — For any specific requirement, the manufacturer should be asked for.

Table 7 Tolerances on Outside Diameter, Axial and Radial Runouts

(*Clause* 10.1)

All dimensions in millimetres.

Diameter Range		Tolerance on Dia	Axial Runout	Radial Runout
Over	Up to and Including			
30	100	± 2·0	0·5	0·6
100	230	± 3·0	0·6	0·6
230	300	± 3·0	1·0	1·0
300	500	± 3·0	1·0	1·0



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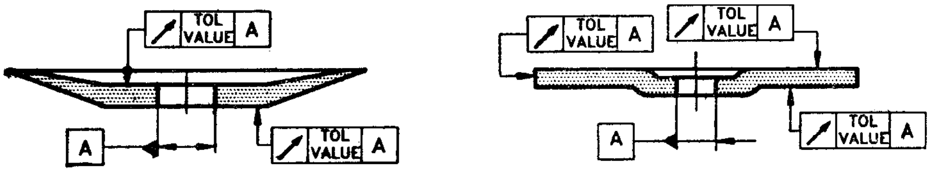

TYPE 12

TYPE 27

FIG. 2 AXIAL AND RADIAL RUNOUTS FOR WALL GRINDING WHEELS

Table 8 Tolerances on Hole Diameters

(*Clause* 10.2)

All dimensions in millimeters.

Hole Diameter Range		Tolerance on Hole Diameter
Over	Up to and Including	
6	30	+ 0·16 0
30	50	+ 0·25 0
50	80	+ 0·30 0
80	120	+ 0·35 0
120	180	+ 0·40 0
180	—	+ 0·46 0

Table 9 Tolerances on Wheel Thickness

(*Clause* 10.3)

All dimensions in millimetres.

Wheel Thickness Range		Tolerance on Thickness
Over	Up to and Including	
—	1·60	± 0·20
1·6	3·20	± 0·30
3·2	6·0	± 0·80
6	10	± 1·00
10	18	± 1·20
18	30	± 1·40

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